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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,110	05/06/2005	Maria Flytzani-Stephanopoulos	3024843 US02	5161

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EXAMINER	
SMITH, JENNIFER A	
ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,110	FLYTZANI-STEPHANOPOULOS ET AL.	
	Examiner	Art Unit	
	JENNIFER A. SMITH	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) *21-44* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/06/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's Election with Traverse and Status of Application

Applicant's election with traverse to prosecute the claims in Group I (claims 1-20) in the reply filed on 02/27/2008 is acknowledged. The traversal is on the ground(s) that Applicant believes a different technical feature is present. Applicant argues that the technical feature is "the removal of at least some of the metallic crystalline particles" and "the presence of a metallic structure lacking crystallinity". Applicant notes that there is no discussion of removing components of the catalytic material in the cited anticipatory reference (D1, Ruettinger et al. US Patent Publication No. 2002/0147103)

In view of Applicant's remarks, this is not found persuasive because admitted prior art – W. Liu and M. Flytzani-Stephanopoulos, J. Catal. 153 (1995) 304-332 discloses a method of preparation of an Au-ceria catalyst substantially similar to that of the present invention. The majority of the gold deposited on substrate was in the form of metal nanoparticles while the structure overall is "lacking crystallinity".

The requirement is still deemed proper and is therefore made FINAL.

Claims 21-44 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 05/06/2005 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered.

Drawings

The amended drawings filed on 05/06/2005 are accepted.

Objection to Specification

The disclosure is objected to because of the following informalities: The Liu reference cited on page 12 of Applicant's specification is in volume **153** (not volume 53) of the Journal of Catalysis. Appropriate correction is required.

Claim Rejections - 35 USC § 112, 2nd Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12-15 are rejected under 35 U.S.C. 112, second paragraph. Claims 12-15 recite "percents" (percent NaCn or percent removal). It is not clear what measurement (volume percent, weight percent, etc) is claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over W. Liu and M. Flytzani-Stephanopoulos. Total oxidation of carbon monoxide over methane over transition metal-fluorite oxide composite catalysts. J. Catal. 153 (1995)

304-332 in view of Bartlett et al. Solution Mining, 2nd Edition, Gordon and Breach Science Publishers, (1998).

In regard to claims 1 and 2, Liu et al. (D2, hereafter) teaches a catalyst preparation method. A lanthanum-cerium nanocrystalline support is provided. Gold nanoparticles (crystalline structure) are deposited on the support [See Page 318, Sections 2.1, 3.1]. The total structure lacks a shared crystal structure.

D1 fails to teach removing some of the metallic crystalline particles from the surface.

Bartlett et al. (D3, hereafter) teaches removal of gold via cyanide leach solutions [See Pages 17-18, 20-21].

It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to remove the gold metallic crystalline particles of the catalyst taught in D2 via a leaching method taught in D3 because in this way, a portion of the gold particles could be recovered and reused in a similar catalyst production process. Recovery of the expensive gold catalytic material in this way reduces production costs. The boundary of the gold particle/cerium oxide is the active site for CO oxidation [See D2, Page 328, Section 4.1]. Therefore leaching to remove the majority of the gold would enhance the interaction between CO gas and the reaction sites.

In regard to claims 3 and 4, D2 teaches the cerium oxide supported catalysts were prepared by coprecipitation [See Page 305, Section 2.1].

In regard to claim 5, the CeO_2-La support structure prepared by the method of claim 1 has a microcrystalline structure.

In regard to claim 6, D2 teaches preparation of the Ce(La) substrate by drying an aqueous salt solution of the metal to form the ceramic structure. Drying takes place at 300°C. While D1 does not teach sintering at a temperature of 400°C the claimed temperature would have been obvious to one of ordinary skill because it represents an optimization of a known range which would occur through routine experimentation through prior art conditions. Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05 II-A. Achieving a sintering temperature in the preparation of the substrate disclosed in D2 represents an obvious and optimizable process variable.

In regard to claims 7-9 and 18, D2 teaches a lanthanum doped cerium oxide/gold catalyst [See Page 318, Section 3.1].

In regard to claims 10-11, D3 teaches leaching with a solution of NaCN.

In regard to claim 12, D3 teaches a pH range is typically between 10 and 11 [See Page 39]. Also See MPEP 2144.05 II-A (mentioned above) for explanation of obviousness of claimed concentration ranges.

In regard to claims 13-16, D3 teaches removal of close to 100% of gold via NaCN leaching [See Page 22, Figure 2.3].

In regard to claim 17, D2 teaches use of the catalyst for total oxidation of carbon monoxide and methane (water gas shift reaction).

In regard to claim 20, D2 teaches a lanthanum doped cerium oxide/gold catalyst [See Page 318, Section 3.1]. Oxygen vacancies and crystal defects are created by doping a cerium with a cation with a lower oxidation state.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over W. Liu and M. Flytzani-Stephanopoulos, J. Catal. 153 (1995) 304-332 in view of Bartlett et al.

Solution Mining, 2nd Edition, Gordon and Breach Science Publishers, (1998) and further in view of Baumann et al. (US Patent No. 6,723,298)

D2 and D3 teach every element of the method of claim 1 but fail to teach a substrate which comprises one of the materials in claim 19.

Baumann et al. (D4, hereafter) teaches a water gas shift catalyst. The substrate support can be made from a metal oxide, mixed oxide, or zeolite [See Column 4, lines 7-9].

It would have been obvious to one of ordinary skill in the art, at the time of Applicant's invention to utilize any number of supports, including zeolite supports because these materials have a wider range of porosities which may be useful in a gaseous water gas shift reaction.

Conclusion

Claims 1-20 are rejected.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. SMITH whose telephone number is (571)270-3599. The examiner can normally be reached on Monday - Friday, 8:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571)272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

Jennifer A. Smith
April 19, 2008
TC 1793

JS